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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,978	10/28/2003	Kia Silverbrook	ZG006US	6497

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SILVERBROOK RESEARCH PTY LTD
393 DARLING STREET
BALMAIN, 2041
AUSTRALIA

EXAMINER	
TRAN, BINH X	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/693,978	SILVERBROOK, KIA	
	Examiner	Art Unit	
	Binh X. Tran	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/28/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(a)-(d) based upon an application filed in Australia on 7-15-1997. A claim for priority under 35 U.S.C. 119(a)-(d) cannot be based on said application, since the United States application was filed more than twelve months thereafter.

Information Disclosure Statement

2. The examiner consider all of the references submitted under information disclosure statement filed on 10-28-2003 except the following references (show below) because applicants fails to submit a English translation of each reference listed that is not in the English language:

DE 195 16 997; DE 196 23 620 A1; DE 195 32 913; DE 43 28 433;

DE 195 16 997 ; DE 32 45 283 ; DE 195 17 969 ; DE 196 39 717

EP 0 478 956 ; DE 1 648 322 ; DE 39 34 280 ; DE 39 05 063 ;

EP 0 092 229 ; DE 37 16 996 ; DE 34 30 155 ; FR 2 231 076.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claim 1 is objected to because of the following informalities: In line 17 of claim 1, "the heating circuits are embedded" (emphasis added; plurality of circuits) appears to be a typo-error for "the heating circuit is embedded" (singular) because applicants only define a single heating circuit in line 16 of claim 1 (i.e. "etching the layer of conductive material to define a heating circuit for each actuator"). If applicants wish to claim a plurality of heating circuits, applicants must disclose a step of defining a plurality of heating circuits. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In line 5 of claim 1, "an actuator that is fast" (emphasis added) is subjective and indefinite. It is unclear from the claim, what specific condition that applicants consider as "fast".

In line 19 of claim 1, "etching the actuator material to define... closure members" (emphasis added) is indefinite. Applicants disclose two different actuator materials: the first layer of actuator material, and the second layer of actuator material. It is unclear from the claim, whether the phrase "the actuator material" refers to the first actuator material, the second actuator material or the combination of the first and the second layer.

In claim 2, the phrase "the actuator material" (occurs 4 times) is indefinite for the same reason as discussed above.

In line 1 of claim 3, the phrase "the actuator material" is indefinite for the same reason as discussed above.

In line 3 of claim 4, the phrase "an inside of the actuator is heated to a relatively greater extend" (emphasis added) is subjective and indefinite.

In claim 7, the phrase "the actuator material" (occurs two times) is indefinite for the same reason as discussed above.

Claims 2-8 are also indefinite because they directly or indirectly depend on indefinite claim 1.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Silverbrook (US 6,247,792).

Respect to claim 1, Silverbrook disclose a method for making a ink jet print head chip, the printhead chip having a substrate that incorporates drive circuitry layers (CMOS circuitry, col. 5 lines 50-55), the method comprising the steps of:

depositing a layer of a sacrificial material (50) on the substrate that incorporates drive circuitry layers positioned on a wafer substrate (12) (col. 7 lines 31-45, Fig 5-6);

etching the layer of sacrificial material (50) to define deposition zones (51) for the actuators (col. 7 lines 48-50, Fig 7);

depositing a first layer of thermally expandable actuator material (52) on the deposition zones (51) (col. 7 lines 50-51);

etching the first layer of actuator material (52) and the drive circuitry layers to define deposition zones for a conductive material of the actuators and for vias for heating circuits of the actuators (col. 7 lines 52-55, Fig 8);

depositing a layer of a conductive material (53) on the first layer of the actuator material (52) (col. 7 lines 55-58);

etching the layer of conductive layer material (53) to define a heating circuit for each actuator (col. 7 lines 59-60, Fig 9);

depositing a second layer of actuator material (54) on the layer of conductive material (53) so that the heating circuit is embedded in the actuator material (col. 7 lines 61, fig 10);

etching the actuator material to define the actuators and the closure member (col. 7 lines 62-64);

forming the nozzle chamber walls (28) with a suitable deposition and subsequent etching technique (col. 8 lines 1-5, fig 11);

etching away the sacrificial layer to free each actuator and closure member (col. 8 lines 20-23);

etching the ink channel through the substrate so that each ink channel in fluid communication with a respective nozzle chamber (col. 8 lines 15-20, Fig 14).

Respect to claim 2, Silverbrook teaches the actuator (35) is shaped so that in a rest condition, the actuator enclosed an arc; when the actuator material is heated, different thermal expansion of the actuator material causes the actuator (35) to straighten at least partially and subsequent cooling of the actuator causes the actuator return to its rest condition, thereby displacing the closure member between the closed and opened position (Fig 2, col. 6 lines 1-60).

Respect to claim 3, Silverbrook disclose that the actuator material is etched so that each closure member is positioned to close a respective ink inlet channel in its closed condition and to open to the ink inlet channel in its open position (fig 15-16). Respect to claim 4, Silverbrook discloses each heating circuit includes a heater (23) positioned proximate an inside edge of the conductive material and return to trace positioned outwardly of the heater, so that an inside region of the actuator material is heated to a greater extend than the remainder of the actuator material (col. 6 lines 25-41). Respect to claim 5, Silverbrook teaches a serpentine length of conductive material (copper) material defines each heater (col. 6 lines 25-28). Respect to claim 6, Silverbrook discloses depositing the first and second layer of actuator material include depositing first and second layer of polytetrafluoroethylene; and depositing the conductive material includes depositing copper (PTFE, col. 7 lines 50-52, 59-60, col. 6 lines 24-29). Respect to claim 7, Silverbrook discloses the actuator defines a coil that partially uncoils when the actuator materials (PTFE) undergoes differential thermal expansion (col. 6 lines 25-44). Respect to claim 8, Silverbrook discloses the chamber

walls (28) are fabricated so that the actuators and the closure are each positioned within respective nozzle chambers (Fig 15-16).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Binh Tran

Binh X. Tran